**Small Business Innovation Research/Small Business Tech Transfer**

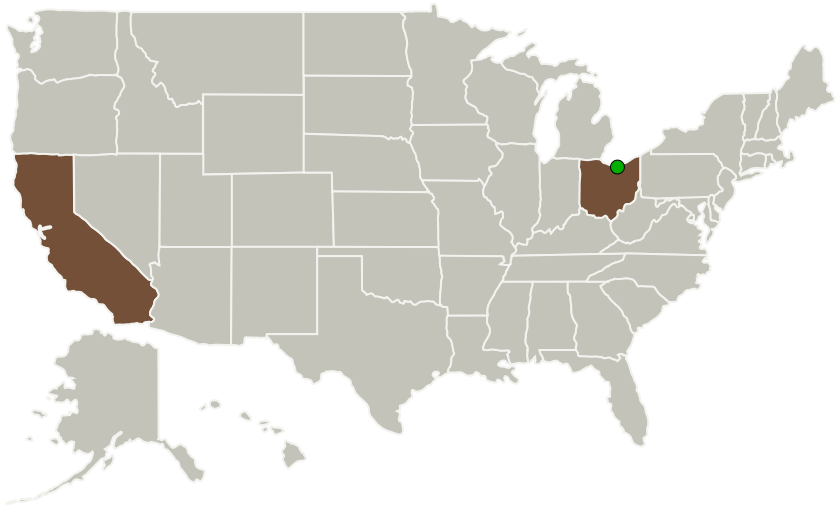
# Materials and Structures Optimization / Process Development for the Mega-ROSA / ROSA Solar Array, Phase II

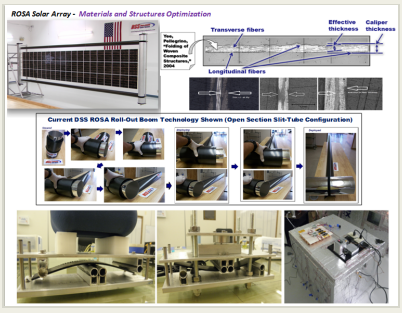
Completed Technology Project (2013 - 2016)

## Project Introduction

Deployable Space Systems, Inc. (DSS), in collaboration with the University of California, Santa Barbara (UCSB), Department of Mechanical Engineering, will focus the proposed NASA STTR Phase 2 program on the materials optimization, structures optimization, creep / relaxation phenomena characterization and analytical modeling, and manufacturing process optimization/development for the Mega-ROSA/ROSA solar array. The ROSA technology (termed for: Roll-Out Solar Array) is a new/innovative mission-enabling solar array system that offers maximum performance in all key metrics and unparalleled affordability for NASA's Space Science & Exploration missions. ROSA will enable NASA's emerging Solar Electric Propulsion (SEP) Space Science & Exploration missions through its ultra-affordability, ultra-lightweight, ultra-compact stowage volume, high strength/stiffness, and its high voltage and high/low temperature operation capability within many environments. Multiple identified end-users provide strong commercial infusion paths for the ROSA solar array upon the successful execution of the proposed Phase 2 program technology advancements.

## Primary U.S. Work Locations and Key Partners






Materials and Structures Optimization / Process Development for the Mega-ROSA / ROSA Solar Array Project Image

## Table of Contents

# Materials and Structures Optimization / Process Development for the Mega-ROSA / ROSA Solar Array, Phase II

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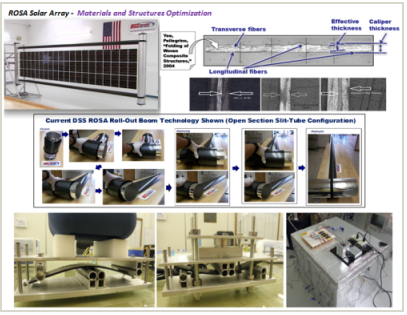
| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| Deployable Space Systems, Inc(DSS) | Lead Organization | Industry | Goleta, California |
| Glenn Research Center(GRC) | Supporting Organization | NASA Center | Cleveland, Ohio |
| University of California-Santa Barbara(UCSB) | Supporting Organization | Academia | Santa Barbara, California |

| Primary U.S. Work Locations | |
|---|---|
| California | Ohio |

## Images




**Project Image**
Materials and Structures Optimization / Process Development for the Mega-ROSA / ROSA Solar Array Project Image *(https://techport.nasa.gov/image/128314)*

## Organizational Responsibility

**Responsible Mission Directorate:**
Space Technology Mission Directorate (STMD)

**Lead Organization:**
Deployable Space Systems, Inc (DSS)

**Responsible Program:**
Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**
Jason L Kessler

**Program Manager:**
Carlos Torrez

**Principal Investigator:**
Brian R Spence

**Co-Investigator:**
Brian Spence

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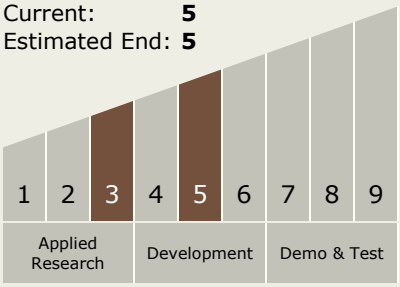
## Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**




## Technology Areas

**Primary:**

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System